

Two new Species of *Glycaspis* (Homoptera: Spondyliaspidae) from potentially endangered *Eucalyptus* Species, and one from *E. stricta*

K. G. CAMPBELL and K. M. MOORE

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Four rare and endangered species of *Eucalyptus* L'Hérit. and one species of relatively limited occurrence which may be threatened in the near future, have been examined for associated species of Psylloidea. Three new species of *Glycaspis* Taylor including a gall-former from *E. stricta* Sieb. ex Spreng. are described and figured. Some alterations to the present phyletic groupings of *Glycaspis* are based on some of the specimens studied.

K. G. Campbell, 17 Third Avenue, Epping, Australia 2121, and K. M. Moore, 16 Prospect Street, Statue Bay, Yeppoon, Australia 4703; manuscript received 3 June 1986, accepted for publication 18 February 1987.

INTRODUCTION

Thirty-one species of endangered or potentially threatened species of *Eucalyptus* L'Hérit. (Pryor, 1981) in all mainland states of Australia were previously sampled for species of Psylloidea which might be utilizing them as host (Moore, 1970, 1977, 1983, 1984, 1985). A further five species of eucalypts listed by Pryor have now been sampled for Psylloidea, and particularly for specimens of *Glycaspis* Taylor 1960, by N. and K. G. Campbell of Sydney.

The code letters prior to each eucalypt species in this paper are those used by Pryor and Johnson (1971, 1981).

Four of the eucalypts sampled, and listed by Pryor as being of highly restricted occurrence and endangered or potentially endangered, are SIQ:A *E. squamosa* Deane and Maiden, MOKDB *E. luehmanniana* F. Muell., MOHCE *E. camfieldii* Maiden and MOKIF *E. burgessiana* Johnson and Blaxell. MOKIJ *E. rupicola* Johnson and Blaxell is listed by Pryor as being of relatively limited extent and may be threatened in the near future.

The former three species occur on the Hawkesbury Sandstone formation in the vicinity of Sydney, and the latter two species in the Blue Mountains area some 40-110km west of Sydney.

A species not listed by Pryor, MOKIG *E. stricta* Sieb. ex Spreng. was also sampled, and a new gall-forming species of *Glycaspis* obtained.

RESULTS

Three new species of *Glycaspis* are described and figured; one gall-former and one round lerp-former of subgenus *Synglycaspis* Moore 1970 together with one round lerp-former of subgenus *Glycaspis*. All specimens recorded in this paper are in the Australian National Insect Collection, CSIRO, Canberra. Psylloidea of genera other than *Glycaspis* have been referred to psyllid taxonomist K. L. Taylor for study.

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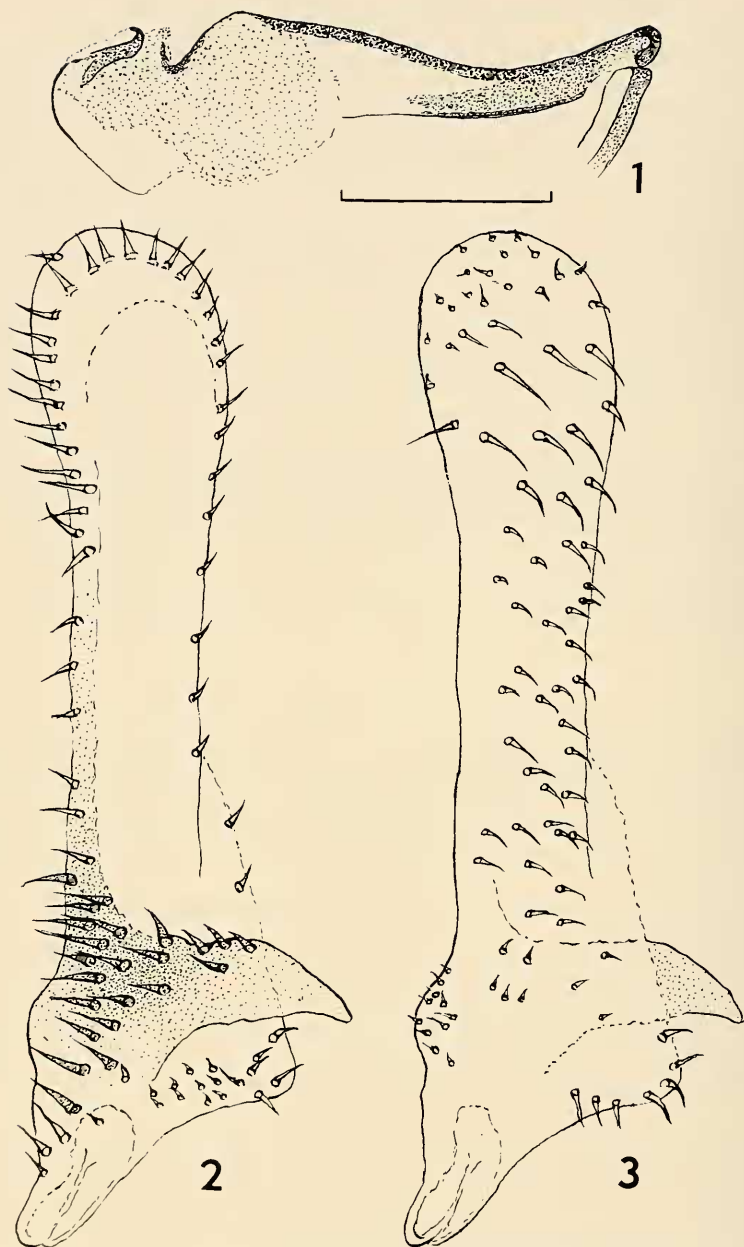
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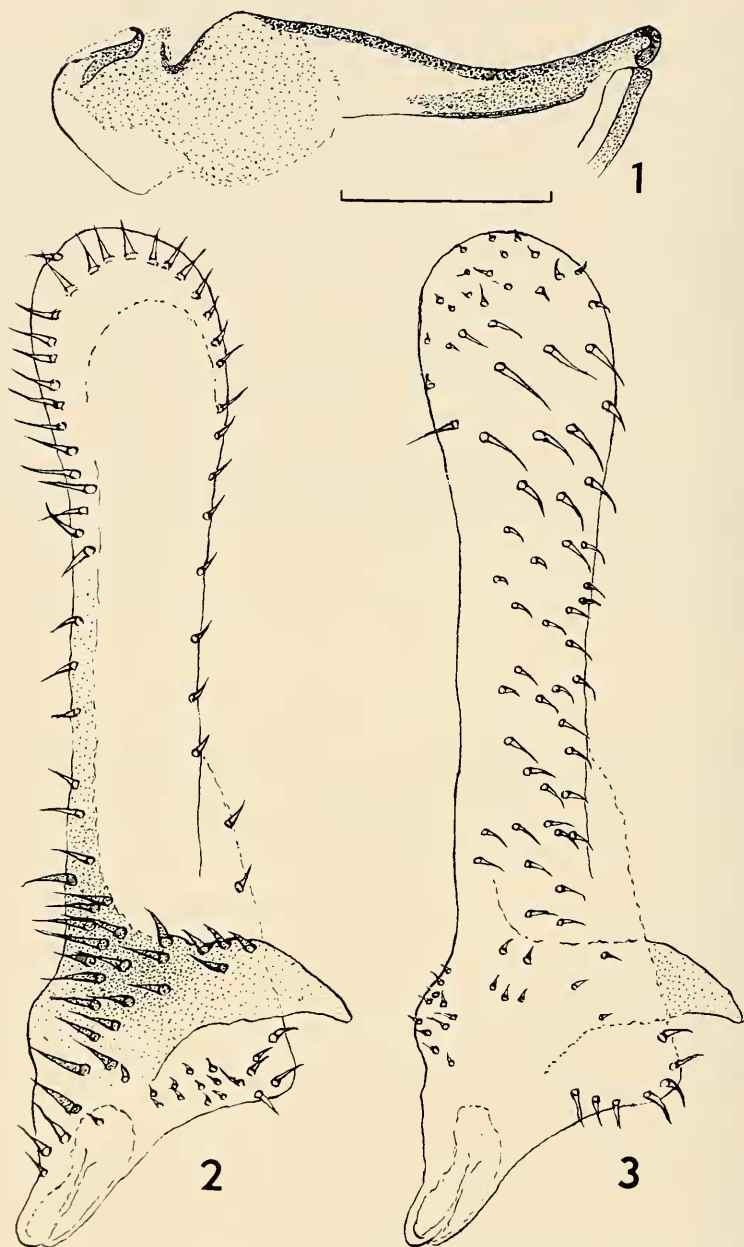
Figs 1-3. *Glycaspis constricta* sp.n. 1, aedeagus; 2, clasper, internal face; 3, clasper, external face. Anterior edge of claspers on right. Scale line 0.1mm.

DESCRIPTIONS AND NOTES

Glycaspis (Synglycaspis) constricta sp.n.

Figs 1-3

Types: Holotype ♂ on slide labelled Kings Tableland, N.S.W., 3 vii 1985, N. and K. Campbell, *E. stricta*, 3.2km along road. Paratypes, 3 slides of single wholemount ♂♂,



Figs 1-3. *Glycaspis constricta* sp.n. 1, aedeagus; 2, clasper, internal face; 3, clasper, external face. Anterior edge of claspers on right. Scale line 0.1mm.

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and 10 ♀ ♀ in 90% ethanol in tube, with same label data; 2 ♂ ♂ on slides and 2 ♀ ♀ in ethanol, with same label data except date which is 30 x 1985. All ex galls.

General colour: females orange with posterior half of forewings suffused yellow which is less intense in male specimens. Claspers and aedeagus as in Figs 1-3. Length of aedeagus 0.297-0.317mm (6 specimens).

Notes: The phyletic position of *G. constricta* is in the *brunosa* group (Moore, 1983) and appears to be nearest to *G. perthecata* Moore from which it differs in the following characters: the distal end of the aedeagus is generally on a lower plane in relation to the total length (Fig. 1), the proximal end is not as sharply curved upward; the strong setae situated posterior to the large spine on the internal face of the claspers are more numerous (Fig. 2), there are fewer setae on the large spine, anterior angle of the 'foot' of the claspers is usually at about 90° to the vertical plane, distal end of claspers broader. The host plant is MOKIG *E. stricta* while that of *G. perthecata* is MOTKA *E. haemastoma* Sm. Galls of this species have not been sighted.

Etymology: The Latin prefix *con-* = with; *stricta* = the name of the host plant.

Glycaspis (Synglycaspis) rupicolae sp.n.

Figs 4-6

Types: Holotype ♂ on slide labelled Sublime Point, Leura, N.S.W., 8-18 i 1986, K. G. Campbell, *E. rupicola* or *E. stricta*, round lerps. Paratypes, 4 slides of single wholemount males with same label data: 1 ♂ on slide labelled Kings Tableland, N.S.W., (Deer Park), 1 xi 1985, N. and K. Campbell, *E. rupicola*; 4 slides of males labelled Kings Tableland, N.S.W., 30 x 1985, N. and K. Campbell, *E. stricta*, 3.2km along road; 1 slide of male with same label data except date which is 3 vii 1985.

There are also 10 ♂ ♂, 15 ♀ ♀ in ethanol in tube with same label data as the holotype; 3 ♀ ♀, nymphs, lerps in tube labelled Kings Tableland, N.S.W., (Deer Park), 1 xi 1985, N. and K. Campbell, *E. rupicola*, bred from lerps; 1 ♂, 8 ♀ ♀, lerps in tube labelled Kings Tableland, N.S.W., 3 vii 1985, K. G. Campbell, *E. stricta*, 3.2km along road, bred ex round lerps, emerged 11 vii 1985; 2 ♂ ♂, 3 ♀ ♀ in tube labelled Kings Tableland, N.S.W., 30 x 1985, N. and K. Campbell, *E. stricta*. These specimens are not designated paratypes, as *G. rupicolae* and *G. cyanoreia* Moore both appear to utilize *E. stricta* and *E. rupicola* as their host, and slide material is at present necessary to separate the species.

General colour: pale cream to orange, sometimes suffused red, with dark markings. Claspers and aedeagus as in Figs 4-6. Length of aedeagus 0.231-0.251mm (8 specimens). Lerps round.

Notes: Characters on which slide material of *G. rupicolae* and *G. cyanoreia* are separable are:

G. rupicolae: proximal dorsal line of aedeagus more or less horizontal; proximal ventral line horizontal (Fig. 4); distal apex in same plane as mediodorsal expansion.

G. cyanoreia: proximal dorsal line of aedeagus strongly upturned; proximal ventral line sloping downwards; distal apex on higher plane than mediodorsal expansion (see Moore, 1970, fig. 39).

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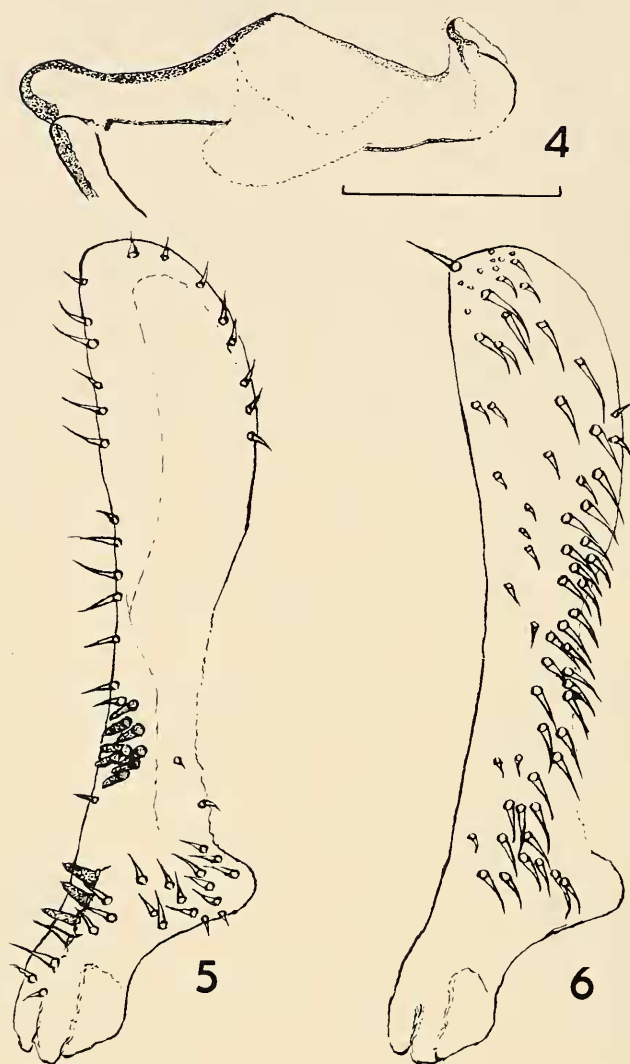
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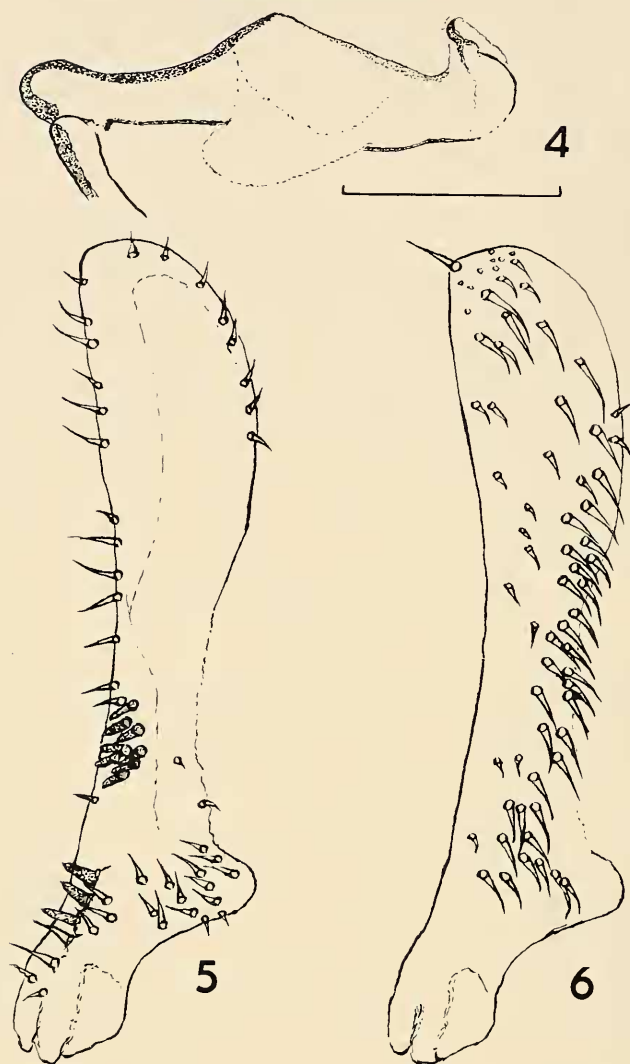
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Figs 4-6. *Glycaspis rupicolae* sp. n. 4, aedeagus; 5, clasper, internal face; 6, clasper, external face. Anterior edge of claspers on right. Scale line 0.1mm.

G. rupicolae is placed in the *endasa* group, and appears to be nearest to *G. wallumaris* Moore from which it differs in the more pointed mediodorsal expansion of the aedeagus (Fig. 4); claspers more curved, with bases more posteriorly oriented, a group of three internal strong dark basal spines (Fig. 5), setae on external face more numerous (Fig. 6). Adults gain orange and red coloration as they feed. The host plants are MOKIG *E. stricta* and MOKIJ *E. rupicola* while that of *G. wallumaris* is MOHEJ *E. conglomerata* Maiden and Blakely, of very restricted distribution in SE Queensland.

The original description of *G. cyanoreia* (Moore, 1961:145) refers to oviposition characteristics of what now appears to be a complex of two species associated with *E. stricta* and *E. rupicola*. On the notes on that species it is stated: 'eggs occur in groups of 25



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Etymology. The name is the Latin genitive form of the host plant *E. rupicola*.

Glycaspis (Glycaspis) nancyana sp.n.

Figs 7-9

Types: Holotype ♂ on slide labelled Maroota Road, N.S.W., 23 x 1985, K. G. Campbell, *E. squamosa*, ½ km SW from property J. Vigara, 1 pair *in cop.* Paratypes. 1 slide, and 4 ♀ ♀ in ethanol in tube with same label data; 2 slides of single wholemount males labelled Maroota Road, N.S.W., 23 x 1985, N. and K. Campbell, *E. squamosa*, ½ km SW from property J. Vigara, bred ex round conical lerps, 31 x 1985; 2 ♂ ♂, 4 ♀ ♀ in tube with same label data; 1 ♂ on slide labelled Maroota Road, N.S.W., 11 ix 1985 N. Campbell, *E. squamosa*, bred ex transparent round conical lerp, 21 ix 1985, N. C.; 1 ♀, lerps, in tube with same label data; 3 ♂ ♂ on slides labelled Pennant Hills, N.S.W., (Sports Centre), Jan., Feb., Mar., 1986, N. and K. Campbell, *E. squamosa*; 7 ♀ ♀ in tube with same label data; 2 ♀ ♀ in tube labelled Maroota Road, N.S.W., 11 ix 1985, K. G. Campbell, sweeping.

General colour: males cream to yellow with variable dark markings, vertex and genitalia often suffused red; females similar to males but dark marks more extensive and sometimes brown or black, red suffusion more extensive, particularly on abdomen. Claspers and aedeagus as in Figs 7-9. Claspers suffused pale brown on distal one third. Length of aedeagus 0.208-0.234 mm (6 specimens). Hindwing Cu₁ as Group (i) (Moore, 1970).

Notes: The phyletic position of *G. nancyana* is in the *felicitaris* group (see rearrangement of species under Phyletic Groupings). It appears to be nearest to *G. rylstonensis* Moore (with a possible affiliation with *G. fuscovena* Moore) but differing in the following characters: the aedeagus is similar in shape to that of *G. rylstonensis* but less upturned distally; claspers narrower, with anterior edge slightly concave at proximal one third, posterior edge straight from one third above base, dark suffusion on distal one third but less than on claspers of *G. fuscovena*, inner basal setae fewer in number. Lerps round.

The host plant is SIQ: A *E. squamosa* of very restricted and disjunct distribution in the Sydney area, N.S.W., while that of *G. rylstonensis* is SNEEF *E. blakelyi* Maiden.

Etymology. Named for Mrs N. Campbell for her interest in, and assistance with, this project.

OTHER *Glycaspis* SPECIES AND NEW HOST RECORDS

Specimens of *G. conserta* Moore were obtained from *E. luehmanniana* W of Mona Vale, and from *E. burgessiana* at Faulconbridge; *G. conflecta* Moore was obtained from *E. camfieldii* at Duffy's Forest.

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The possible phylogeny of *Glycaspis* species was indicated in a grouping of the species (Moore, 1983). An additional group is now required to contain some of the specimens examined during this study.

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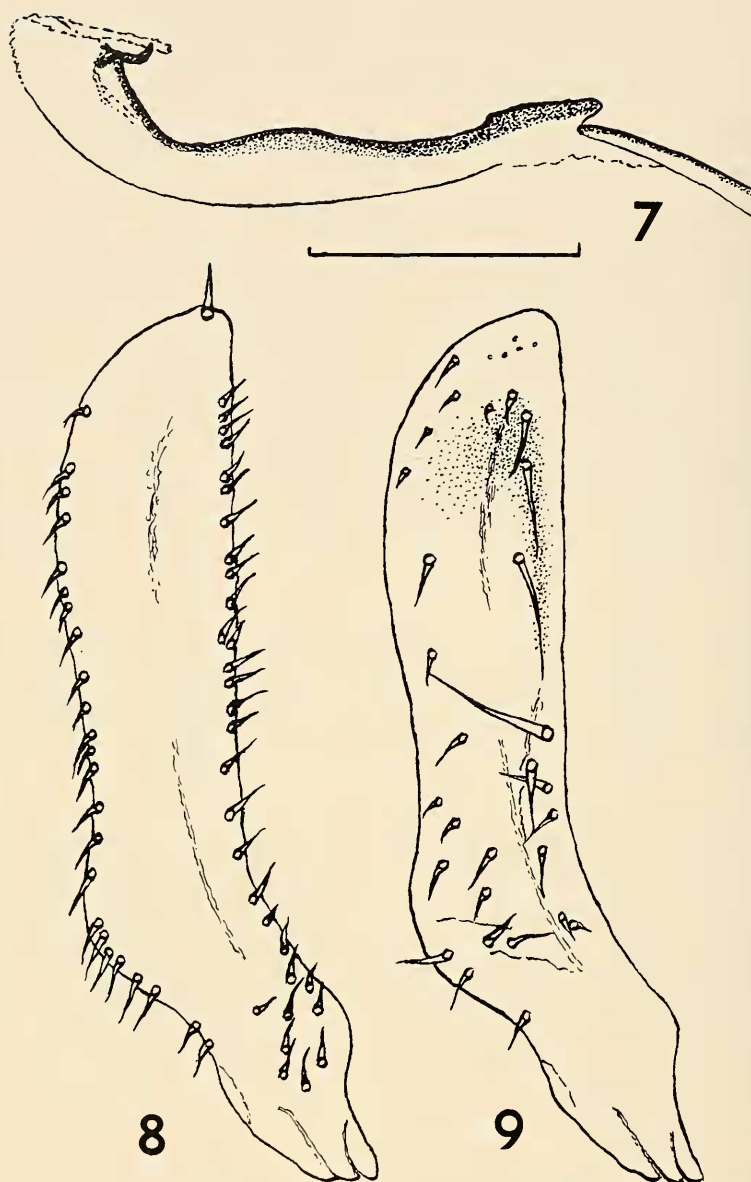
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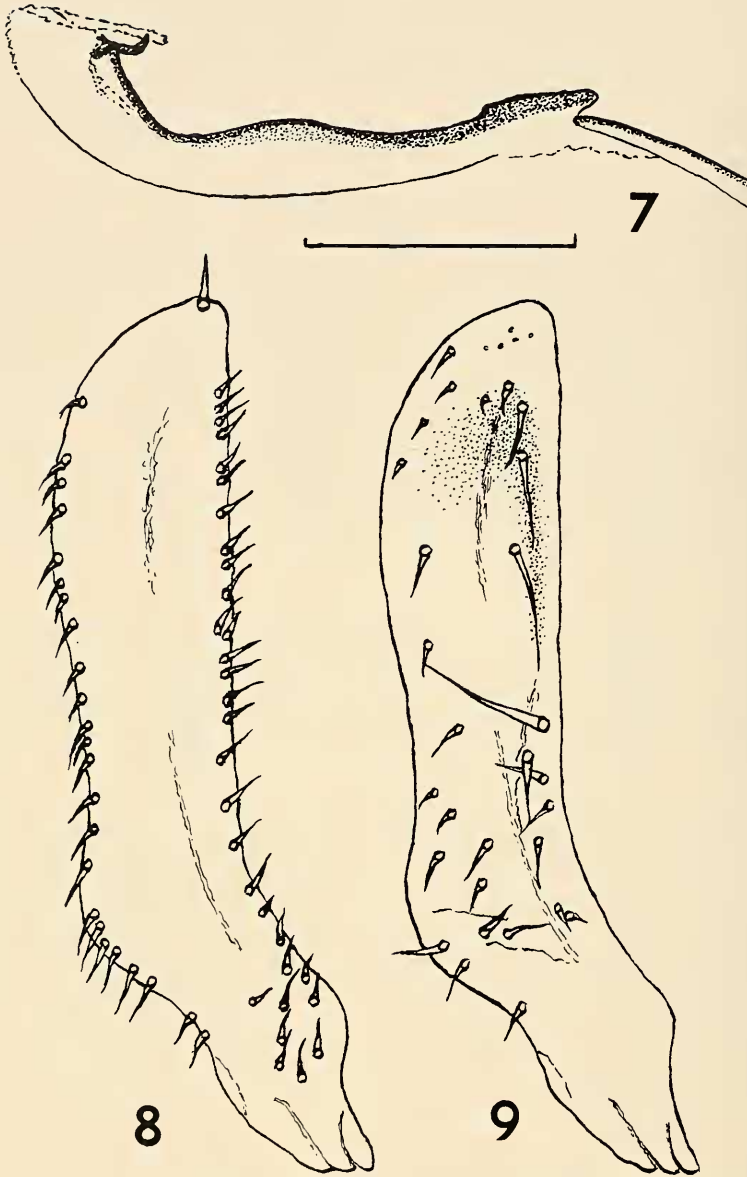
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The *dreptodria* group of subgenus *Synglycaspis* (group 7 of Moore, 1983: 181) is reduced to the three species *G. dreptodria* Moore, *G. icterica* Moore and *G. seriata* Moore which have the aedeagus weakly upturned proximally; the six species *G. conflecta*, *G. conserta*, *G. fuliginis* Moore, *G. cyanoreia*, *G. salebrosa* Moore and *G. aggregata* Moore, now termed the *conflecta* group, have the aedeagus strongly upturned proximally; the *endasa* group consists of the five species *G. particeps* Moore, *G. hirsuta* (Froggatt), *G. endasa*



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Moore, *G. wallumaris* and *G. rupicolae*, which have the aedeagus almost horizontal proximally.

The affiliations of *G. nancyana* suggest the transfer of *G. rylstonensis* from the *flavilabris* group 10 to the *felicitaris* group 9 (Moore, 1983: 182), with *G. nancyana* prior to *G. rylstonensis*, and both of these species immediately prior to *G. fuscovena*.

ACKNOWLEDGEMENTS

The authors are most grateful to Peter Weston of the New South Wales National Herbarium, Royal Botanic Gardens, Sydney, for precise locations of the eucalypt species in the field, and to Mrs N. Campbell for her assistance with the project.

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The affiliations of *G. nancyana* suggest the transfer of *G. rylstonensis* from the *flavilabris* group 10 to the *felicitaris* group 9 (Moore, 1983: 182), with *G. nancyana* prior to *G. rylstonensis*, and both of these species immediately prior to *G. fuscovena*.

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